NIELIT, Gorakhpur

Course Name: A-level (1st Sem.) Subject:IoT

Topic: LM35 Interfacing with Arduino UNO Date: 24.03.2020

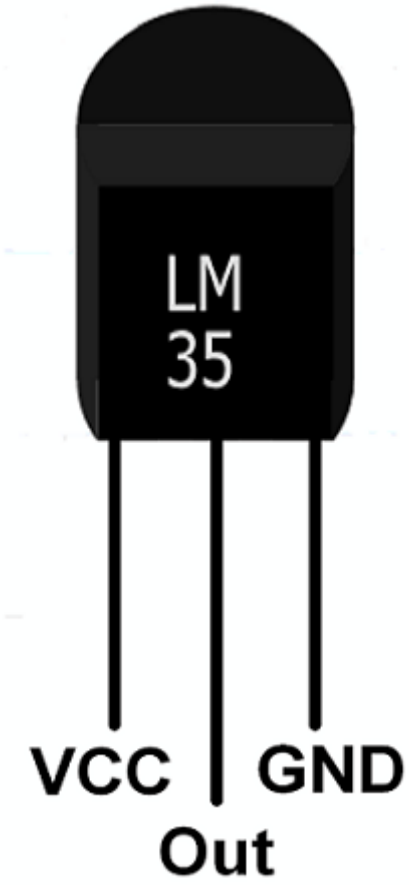
Introduction

LM35 Temperature Sensor

- LM35 is a temperature measuring device having an analog output voltage proportional to the temperature.
- It provides output voltage in Centigrade (Celsius). It does not require any external calibration circuitry.
- The sensitivity of LM35 is 10 mV/degree Celsius. As temperature increases, output voltage also increases
  E.g. 250 mV means 25°C.

- It is a 3-terminal sensor used to measure surrounding temperature ranging from -55 °C to 150 °C.
- LM35 gives temperature output which is more precise than thermistor output.

Pin Description



VCC: Supply Voltage (4V – 30V)

Out: It gives analog output voltage which is proportional to the temperature (in degree Celsius).

GND: Ground

Measuring the temperature of surroundings using LM35 and displaying it on the serial monitor of Arduino.

Here, LM35 output is given to analog pin A1 of Arduino UNO. This analog voltage is converted to its digital form and processed to get the temperature reading.

Sketch for Temperature Measurement

```
const int lm35_pin = A1;          /* LM35 O/P pin */
void setup() {
 Serial.begin(9600);
}
```

```
void loop() {
  int temp_adc_val;
  float temp_val;
  temp_adc_val = analogRead(lm35_pin);                /* Read Temperature */
  temp_val = (temp_adc_val * 4.88);         /* Convert adc value to equivalent voltage */
  temp_val = (temp_val/10);     /* LM35 gives output of 10mv/°C */
  Serial.print("Temperature = ");
  Serial.print(temp_val);
  Serial.print(" Degree Celsius\n");
  delay(1000);
}
```

Exercise:

Write a program to turn on led when temperature is above certain value (25^0C)